

GM110

V-TONE

User's Manual

Version 1.2 July 2004

ENGLISH



www.behringer.com



V-TONE GM110

IMPORTANT SAFETY PRECAUTIONS



CAUTION: To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside; refer servicing to qualified personnel.

WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.




This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure—voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

DETAILED SAFETY INSTRUCTIONS:

- 1) Read these instructions.
 - 2) Keep these instructions.
 - 3) Heed all warnings.
 - 4) Follow all instructions.
 - 5) Do not use this apparatus near water.
 - 6) Clean only with dry cloth.
 - 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
 - 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
 - 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
 - 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
 - 11) Only use attachments/accessories specified by the manufacturer.
 - 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
 - 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
 - 15) **CAUTION** - These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions unless you are qualified to do so.

V-TONE

True Analog Modeling 30-Watt Guitar Amp with Speaker Simulations and Direct Out

- ▲ Powerful 30-Watt guitar amplifier, equipped with an original JENSEN® / BUGERA™ 10" guitar speaker
- ▲ Authentic V-TONE Analog Modeling for 3 classic guitar amps, 3 speaker simulation models plus 3 gain modes—providing you with 27 modeled sounds
- ▲ Patented* DYNAMIZER circuitry captures every nuance of your playing and lends tube-like compression to your tone
- ▲ Balanced direct out with XLR connector and ground lift delivers full preamplified sound including all amp, speaker, gain mode, drive, EQ and level settings for direct recording or connection of an external power amp/cabinet combination
- ▲ FX loop for external effects devices (rack effects, stomp boxes, wah-wah pedals, etc.)
- ▲ Extensive master section with dedicated 3-band EQ and master level control
- ▲ Wide-range drive control for super-fat sounds with any pickups
- ▲ Headphone output with speaker simulation lets you practice anywhere and at any time
- ▲ Additional 4 Ohm speaker out with automatic internal speaker mute
- ▲ Rugged construction for years of trouble-free use
- ▲ Conceived and designed by BEHRINGER Germany

* German Patent No.: 100 15 833

FOREWORD



Dear Customer,
welcome to the team of BEHRINGER users, and thank you very much for expressing your confidence in us by purchasing the BEHRINGER V-TONE.

Writing this foreword for you gives me great pleasure, because it represents the culmination of many months of hard work delivered by our engineering team to achieve a very ambitious goal: to develop an outstanding guitar amp that is at the forefront of what is

technically possible and that can be used in many different applications. Our guitar amps offer you strong performance, their sound is amazingly clear, and they are easy to use both as direct recording amps as well as stage amps. The task of designing our new V-TONES certainly meant a great deal of responsibility, which we assumed by focusing on you, the discerning user and musician. Meeting your expectations also meant a lot of work and night shifts. But it was fun, too. Developing a product usually brings a lot of people together, and what a great feeling it is when all who participated in such a project can be proud of what they've achieved.

It is our philosophy to share our enjoyment with you, because you are the most important member of the BEHRINGER team. With your highly competent suggestions for new products you've made a significant contribution to shaping our company and making it successful. In return, we guarantee you uncompromising quality as well as excellent technical and audio properties at an extremely reasonable price. All of this will enable you to give free rein to your creativity without being hampered by budget constraints.

We are often asked how we manage to produce such high-quality devices at such unbelievably low prices. The answer is quite simple: it's you, our customers! Many satisfied customers mean large sales volumes enabling us to get better purchasing terms for components, etc. Isn't it only fair to pass this benefit on to you? Because we know that your success is our success too!

I would like to thank all of you who have made the V-TONE Series possible. You have all made your own personal contributions, from the developers to the many other employees at this company, and to you, the BEHRINGER user.

My friends, it's been worth the effort!

Thank you very much,

Uli Behringer

1. INTRODUCTION

Thank you for purchasing the V-TONE GM110. The GM110 is a modern Guitar Workstation that sets new standards in practice amp engineering.

When developing the GM110, our primary objective was to reproduce the authentic sound of analog guitar amplifiers and at the same time provide you with a tool for straightforward recording. The concept of intuitive operation remained a central consideration.

Many people contributed to this intense development project: studio musicians, collectors of vintage guitar amps, music and guitar lovers alike. We even invited guitar amp tuning experts to help us develop an amplifier that unites the very best of both worlds.

The demands placed on a guitar amp are nowadays very broad. A guitarist should offer a wide array of sounds, but at the same time be able to quickly adapt to specific requirements of various applications—be it home recording, studio, live performances, etc. That's why it is very important to us to be able to offer you a maximal sound diversity as well as diverse connection possibilities with our V-TONE. Fret not: you will quickly master the V-TONE and will be able to quickly learn how to use all of its capabilities easily and intuitively.

With its up-to-date circuitry, the V-TONE features the functionality and dependability of a truly modern guitar amp. Yet it is user-friendly and problem-free as if it were a classic tube combo. We highly recommend taking your time to truly learn all of the V-TONE's functions so you can reach its maximum potential.

1.1 The design concept

The philosophy behind BEHRINGER products guarantees a no-compromise circuit design and employs the best choice of components. The operational amplifiers employed by BEHRINGER and used in the V-TONE GM110 are exceptional: they boast extreme linearity and very low distortion characteristics. To complement this, the choice of components includes low-tolerance resistors and capacitors, high-quality potentiometers and switches, and several other carefully selected elements.


The robust housing of your V-TONE, with its oversize power supply, gives you the peace of mind that the V-TONE will hold its own even under the most demanding stage conditions. The housing is made of high-grade, environment-friendly MDF wood consisting of multiply impregnated layers.

1.2 DYNAMIZER technology and analog modeling

When an electric instrument is amplified, that's where you either make it or break it. Unlike the signals that have been mixed and mastered, the signals of electric instruments have extremely high signal peaks, placing the dynamic range of the amp's circuitry under immense strain. How your amp reacts to these signal peaks is one of its most defining characteristics.

That's why we've equipped all V-TONE Series amps with our unique DYNAMIZER preamplifier circuitry. It guarantees a lively sound with a lot of punch, even when the amp is pushed to its limits. Combine that with our V-TONE analog modeling, and not only do you have amazingly authentic tube sounds at your fingertips, you also get the dynamic performance typical of the respective amp type. Crystal-clear guitar tones come through with transparency, warmth and the compression typical of tube amps. Even as distortion increases, the sound remains lively and full of power, without losing any of its assertiveness.

All along, you have full control over the volume. Plainly talking, you can take the same sound you are used to at your practice room and replicate it in your bedroom at much more reasonable volume levels, or you can even record yourself while playing.


 The following user's manual will familiarize you with the control elements of your new V-TONE and let you learn all of its functions. After reading this manual, store it somewhere where you can easily find in the future, should you need to look up some information.

1.3 Before you get started

1.3.1 Shipment


The V-TONE was carefully packed at the assembly plant to assure secure transport.

Should the condition of the cardboard box suggest that your V-TONE may have been damaged in transport, please inspect the unit immediately and look for physical indications of damage.


 **Damaged equipment should NEVER be sent directly to us. Please inform the dealer from whom you acquired it immediately as well as the transportation company from which you took delivery. Otherwise, all claims for replacement/repair may be rendered invalid.**


1.3.2 Initial operation

Please make sure that your V-TONE is provided with sufficient ventilation, and never place it on other amplifiers or in the vicinity of a heater to avoid the risk of overheating.



 **Before plugging your V-TONE into a power socket, please make sure you have selected the correct voltage:**

The fuse mount near the power cord connector has three triangular markings. Two of these triangles are facing opposite one another. Your V-TONE is set up for the voltage indicated near these markings, and can be altered by turning the fuse mount by 180 degrees. **ATTENTION: This does not apply to export models built for 120 V, for example!**

 **If you use your V-TONE unit with a different voltage, you must change the fuses accordingly. The correct value of the fuses needed can be found in the chapter "SPECIFICATIONS".**

 **Faulty fuses must be replaced with fuses of appropriate rating, without exception! The correct value of the fuses needed can be found in the chapter "SPECIFICATIONS".**

Power is delivered via the cable that was delivered with the V-TONE. All mandatory safety precautions have been adhered to.

 **Please make sure that all your equipment is grounded at all times. For your own protection, you should never tamper with the grounding of the cable or the unit itself. The unit shall always be connected to a mains socket outlet with a protective earthing connection. You can eliminate humming problems caused by grounding at the D.I. OUT by pressing the GND switch (Groundlift, ).**

1.3.3 Warranty

Please send the completely filled out warranty card within 14 days of purchase to us, as warranty claims may otherwise be rendered invalid. The serial number of your V-TONE is located on the rear. Alternatively, you may register online at www.behringer.com.

2. CONTROL ELEMENTS

2.1 Front panel

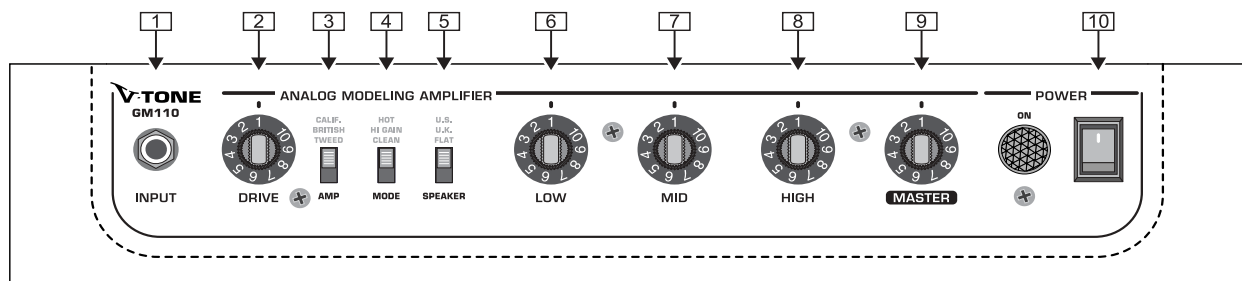






Fig. 2.1: Front panel control elements


 **1** *INPUT* is the GM110's 1/4" jack input for your guitar. Use a commercial 1/4" jack mono cable (not from a DIY shop, but from a specialist music dealer).


 **2** The *DRIVE* control determines the amplification in the input section. It allows you to finely tune the GM110 preset to the output level of your guitar pick-up (depending on selected amp, mode and speaker combination) in order to achieve the desired degree of distortion.


 **Use the *DRIVE* control to set the desired sound and use the *MASTER* control to set the desired volume!**


 **3** The *AMP* switch enables you to emulate the basic sounds from three guitar amp designs; these are based on classic amp models and will be familiar to you from numerous recordings. The *TWEED* setting delivers transparent sounds, clear as a bell, with dynamic bass response. The *BRITISH* setting has an aggression that comes straight from the heart and is powerful with an unmistakable ability to make itself heard. Fuller and more balanced, and yet subtly


differentiated, the *CALIF(ORNIAN)* setting is particularly suitable for singing lead sounds.

 **4** With the *MODE* switch, you choose between one of three possible gain settings (*CLEAN*, *HI GAIN* and *HOT*) to achieve the basic sound selected with the *AMP* switch.

 **5** The *SPEAKER* switch provides you with simulations of two classic guitar loudspeakers: 4x12"-loudspeakers in a closed back enclosure (U.K.), and 2x12" loudspeakers, open back (U.S.). In addition, we have also installed a further frequency response correction (*FLAT*) that is specially adapted to the GM110 enclosure.

 **6** The *LOW* control in the EQ section enables you to boost or cut the bass frequencies.

 **7** With the *MID* control, you can boost/cut the midrange frequencies.

 **8** The *HIGH* control governs the upper frequency range.

V-TONE GM110

- 9 With the *MASTER* control, you determine the overall and headphone volume of your V-TONE GM110. It should be set fully to the left when you operate the *POWER* switch or disconnect the instrument cable from the guitar or amp.
- 10 Use the *POWER* switch to put the GM110 into operation.

The *POWER* switch should always be in the "Off" position when you are about to connect your unit to the mains.

- ⚠ Attention: The *POWER* switch does not fully disconnect the unit from the mains. Unplug the power cord completely when the unit is not used for prolonged periods of time.

2.2 Rear panel



Fig. 2.2: Rear panel connectors

- 11 **FUSEHOLDER / VOLTAGE SELECTION.** Before you connect the device to the network, please make sure that your local voltage matches the voltage indicated on the unit. Blown fuses may only be replaced by fuses of the same type and rating. Some models allow for inserting the fuse holder in two different positions in order to switch over from 230 V to 120 V operation, and vice versa. Please note that, for 120 V operation outside Europe, you need to use a fuse of a higher rating. The network connection is made via a *STANDARD IEC INLET SOCKET*. Use the enclosed power cord to connect the unit to the mains.
- 12 **SERIAL NUMBER.** Please take the time to fill out the warranty card within 14 days of purchasing the device, otherwise you will lose your extended warranty. Or simply register online at www.behringer.com.
- 13 You can use the *SPEAKER* socket to connect an additional loudspeaker to your V-TONE GM110. The external loudspeaker should have an impedance of 4 Ohms. When using this socket, the internal loudspeaker is muted. For additional information on connecting an external loudspeaker, refer to chapter 4.1.
- 14 The 6.3 mm *PHONES* jack allows you to monitor the GM110's audio signal with a pair of commercially available headphones. As soon as this socket is used, the loudspeaker will be muted.
- ⚠ Since speakers can have quite an impact on the sound of a guitar amp, both the headphones and D.I. OUT signals are frequency-corrected (with speaker correction). Without this frequency correction extreme treble frequencies would deteriorate the sound.
- ⚠ Low-impedance headphones may begin to produce distortion at certain volume levels. In such cases, please reduce the volume by turning back the *MASTER* control.

- 15 At the *D.I. OUT* output (balanced XLR socket), you can tap the audio signal of the V-TONE GM110 in order, for example, to feed it into a mixing console and record it. This audio signal is frequency-corrected (Speaker Simulation). The level of the D.I. OUT (max. +22 dBu) is designed to provide simple connection to mixers or other audio devices.
- 16 With the *GND LIFT* switch, you can unplug the electrical bonding of the D.I. OUT, if ground loop or humming problems occur.
- 17 *FX SEND* is the output socket for the serial effects path of the GM110. You can use this to loop in the external effects (e.g. a wah-wah pedal) or to connect an external power amplifier, should you require a greater output. The internal signal path will not be interrupted. The frequency-corrected signal at the *FX SEND* socket is affected by all GM110 controls.
- 18 The output of the looped-in effects device is connected to the *FX RETURN* socket. When you connect a cable to this socket, you interrupt the internal signal path.
- ⚠ Please note that, when using the serial effects path, the effects device will control the level of wet (affected) signal to dry (direct) signal.

3. WIRING TIPS

3.1 Standard set-up consisting of guitar, external effects device and simultaneous recording

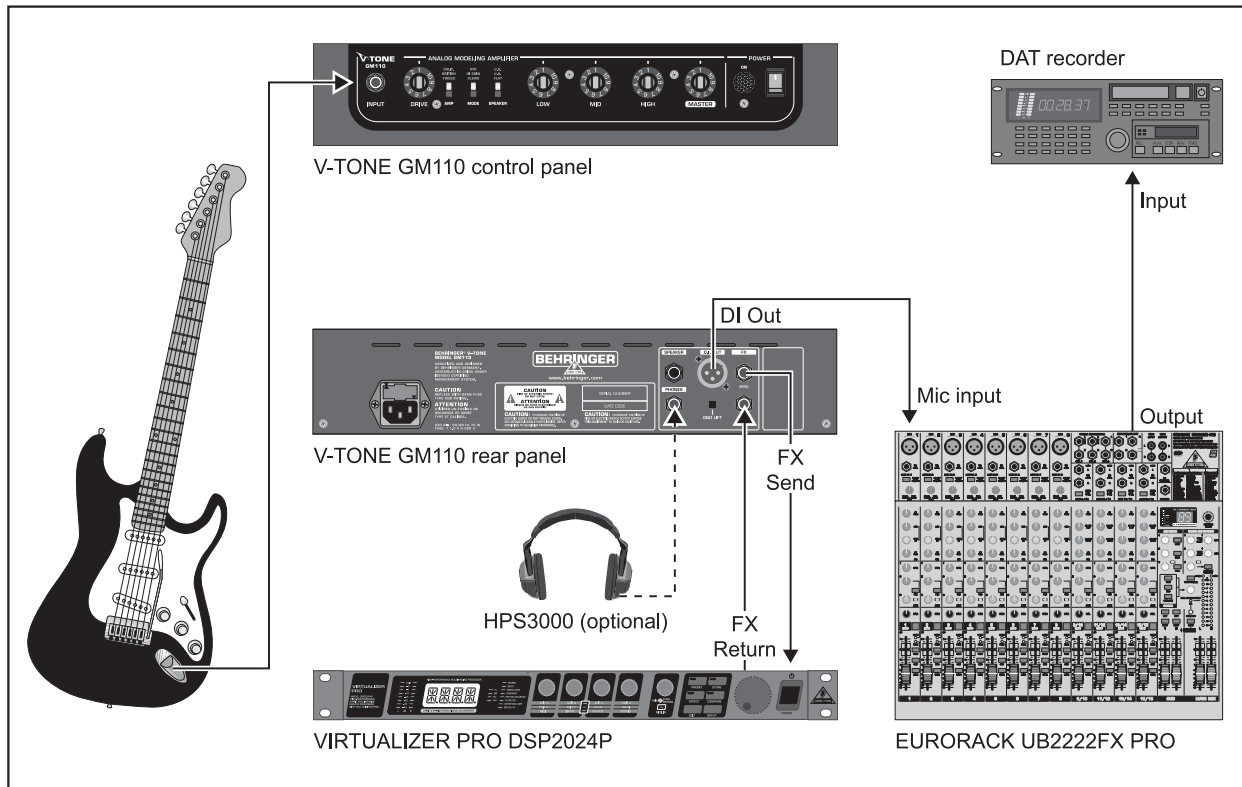


Fig. 3.1: Standard set-up for recording with the V-TONE GM110

To use your V-TONE GM110 for rehearsals, in the studio or on stage, please wire up the unit as shown in fig. 2.1. Of course, you can also use a wah-wah or other pedal effect instead of the external 19" effects unit. Connecting the headphones will mute the built-in speaker.

If you wish to use a guitar tuner, please connect it to the FX SEND of your V-TONE GM110. If there is no further effects device connected, you can leave the FX RETURN as it is. When using an external effects device, the tuner should be placed before the effects device to prevent the tuner from receiving any effects signal.

4. AUDIO CONNECTIONS

The BEHRINGER V-TONE GM110 is fitted with audio inputs and outputs in the form of 1/4" mono jacks. The exceptions to this are the headphones output and the D.I. OUT.

- 👉 Please ensure that only qualified personnel install and operate the device.
- 👉 Please make sure that all units have a proper ground connection. For your own safety, never remove or disable the ground conductor of the unit or of the AC power cable. Instead, you can eliminate hum problems caused by grounding (e.g. when connected to a mixing console) by pressing the GND switch (Groundlift, [16]).

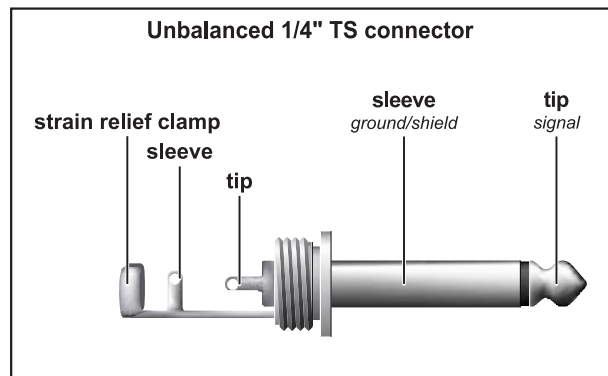
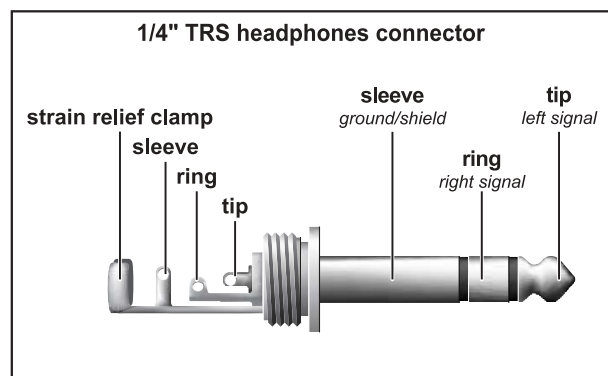


Fig. 4.1: 1/4" TS connector (input, FX send, FX return, speaker)



4.2: Wiring of a stereo headphones plug

Balanced XLR connectors

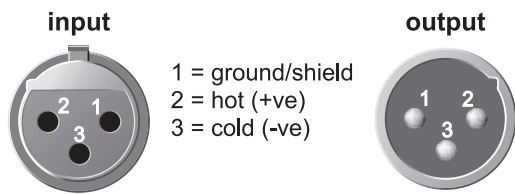


Fig. 4.3: XLR connectors (D.I. Out)

4.1 Loudspeaker connection

The GM110 features a loudspeaker connection (mono jack socket) that allows you to hook up a supplementary speaker. Optimum adaptation of the amp to the loudspeaker is ensured with an 4 Ω loudspeaker. With too high an impedance load, the maximum power output will drop in proportion to the resistance connected.

Do not use an instrument cable to connect an external loudspeaker, rather use a special loudspeaker cable. This will prevent any unnecessary losses of sound and output.

5. SPECIFICATIONS

AUDIO INPUTS

Guitar input		
Connector		1/4" mono jack socket
Type		RF filtered input
Input impedance		approx. 1 MΩ unbalanced
FX return		
Connector		1/4" mono jack socket
Input impedance		approx. 1 MΩ unbalanced

AUDIO OUTPUTS

FX send		
Connector		1/4" mono jack socket
Type		Low-impedance line level output
Output impedance		approx. 100 Ω unbalanced
D.I. Out		
Connector		XLR
Type		Balanced, low-impedance line level output
Output impedance		approx. 100 Ω
Max. output level		+22 dBu

LOUDSPEAKER OUPUT

Connector	1/4" mono jack socket
Load impedance (nom.)	4 Ω

SYSTEM SPECIFICATIONS

Power amp output	30 Watts RMS into 4 Ω
------------------	-----------------------

LOUDSPEAKER

Type	10" Vintage loudspeaker, model JENSEN® JCH10/35 or BUGERA™ loudspeaker
Impedance	4 Ω
Power handling	35 Watts (JENSEN®) 60 Watts (BUGERA™)

POWER SUPPLY

Mains voltage		
USA/Canada		120 V~, 60 Hz
Europe/U.K./Australia		230 V~, 50 Hz
Japan		100 V~, 50 - 60 Hz
General export model		120 /230 V~, 50 - 60 Hz
Power consumption		70 W maximum
Fuse		100 - 120 V~: T 2 A H 250 V 200 - 240 V~: T 1 A H 250 V
Mains connection		Standard IEC receptacle

DIMENSIONS/WEIGHT

Dimensions (H x W x D)	approx. 15" (381 mm) x 14 1/2" (369 mm) x 9 1/2" (242 mm)
Weight	approx. 12.5 kg

BEHRINGER is constantly striving to maintain the highest quality standards. Modifications may be made to existing products without prior notice. Specifications and appearance may differ from those listed or illustrated.

6. WARRANTY

§ 1 WARRANTY CARD/ONLINE REGISTRATION

To be protected by the extended warranty, the buyer must complete and return the enclosed warranty card within 14 days of the date of purchase to BEHRINGER Spezielle Studiotechnik GmbH, in accordance with the conditions stipulated in § 3. Failure to return the card in due time (date as per postmark) will void any extended warranty claims. Based on the conditions herein, the buyer may also choose to use the online registration option via the Internet (www.behringer.com or www.behringer.de).

§ 2 WARRANTY

1. BEHRINGER (BEHRINGER Spezielle Studiotechnik GmbH including all BEHRINGER subsidiaries listed on the enclosed page, except BEHRINGER Japan) warrants the mechanical and electronic components of this product to be free of defects in material and workmanship for a period of one (1) year* from the original date of purchase, in accordance with the warranty regulations described below. If the product shows any defects within the specified warranty period that are not excluded from this warranty as described under § 4, BEHRINGER shall, at its discretion, either replace or repair the product using suitable new or reconditioned parts. In the case that other parts are used which constitute an improvement, BEHRINGER may, at its discretion, charge the customer for the additional cost of these parts.

2. If the warranty claim proves to be justified, the product will be returned to the user freight prepaid.

3. Warranty claims other than those indicated above are expressly excluded.

§ 3 RETURN AUTHORIZATION NUMBER

1. To obtain warranty service, the buyer (or his authorized dealer) must call BEHRINGER (see enclosed list) during normal business hours **BEFORE** returning the product. All inquiries must be accompanied by a description of the problem. BEHRINGER will then issue a return authorization number.

2. Subsequently, the product must be returned in its original shipping carton, together with the return authorization number to the address indicated by BEHRINGER.

3. Shipments without freight prepaid will not be accepted.

§ 4 WARRANTY REGULATIONS

1. Warranty services will be furnished only if the product is accompanied by a copy of the original retail dealer's invoice. Any product deemed eligible for repair or replacement under the terms of this warranty will be repaired or replaced.

2. If the product needs to be modified or adapted in order to comply with applicable technical or safety standards on a national or local level, in any country which is not the country for which the product was originally developed and manufactured, this modification/adaptation shall not be considered a defect in materials or workmanship. The warranty does not cover any such modification/adaptation, irrespective of whether it was carried out properly or not. Under the terms of this warranty, BEHRINGER shall not be held responsible for any cost resulting from such a modification/adaptation.

3. Free inspections and maintenance/repair work are expressly excluded from this warranty, in particular, if caused by improper handling of the product by the user. This also applies to defects caused by normal wear and tear, in particular, of faders, crossfaders, potentiometers, keys/buttons, tubes, guitar strings, illuminants and similar parts.

4. Damages/defects caused by the following conditions are not covered by this warranty:

- ▲ improper handling, neglect or failure to operate the unit in compliance with the instructions given in BEHRINGER user or service manuals.
- ▲ connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used.
- ▲ damages/defects caused by force majeure or any other condition that is beyond the control of BEHRINGER.

5. Any repair or opening of the unit carried out by unauthorized personnel (user included) will void the warranty.

6. If an inspection of the product by BEHRINGER shows that the defect in question is not covered by the warranty, the inspection costs are payable by the customer.

7. Products which do not meet the terms of this warranty will be repaired exclusively at the buyer's expense. BEHRINGER will inform the buyer of any such circumstance. If the buyer fails to submit a written repair order within 6 weeks after notification, BEHRINGER will return the unit C.O.D. with a separate invoice for freight and packing. Such costs will also be invoiced separately when the buyer has sent in a written repair order.

§ 5 WARRANTY TRANSFERABILITY

This warranty is extended exclusively to the original buyer (customer of retail dealer) and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, etc.) shall be entitled to give any warranty promise on behalf of BEHRINGER.

§ 6 CLAIM FOR DAMAGES

Failure of BEHRINGER to provide proper warranty service shall not entitle the buyer to claim (consequential) damages. In no event shall the liability of BEHRINGER exceed the invoiced value of the product.

§ 7 OTHER WARRANTY RIGHTS AND NATIONAL LAW

1. This warranty does not exclude or limit the buyer's statutory rights provided by national law, in particular, any such rights against the seller that arise from a legally effective purchase contract.

2. The warranty regulations mentioned herein are applicable unless they constitute an infringement of national warranty law.

* Customers in the European Union please contact BEHRINGER Germany Support for further details.

Technical specifications and appearance subject to change without notice. The information contained herein is correct at the time of printing. JENSEN® and its respective logo are registered trademarks of its respective owner. Their use neither constitutes a claim of the trademarks by BEHRINGER® nor affiliation of the trademark owners with BEHRINGER®. BEHRINGER® accepts no liability for any loss which may be suffered by any person who relies either wholly or in part upon any description, photograph or statement contained herein. Colours and specification may vary slightly from product. Products are sold through our authorised dealers only. Distributors and dealers are not agents of BEHRINGER® and have absolutely no authority to bind BEHRINGER® by any express or implied undertaking or representation. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording of any kind, for any purpose, without the express written permission of BEHRINGER Spezielle Studiotechnik GmbH. BEHRINGER® is a registered trademark.

ALL RIGHTS RESERVED © 2004 BEHRINGER Spezielle Studiotechnik GmbH. BEHRINGER Spezielle Studiotechnik GmbH, Hanns-Martin-Schleyer-Str. 36-38, 47877 Willich-Münchheide II, Germany. Tel. +49 2154 9206 0, Fax +49 2154 9206 4903